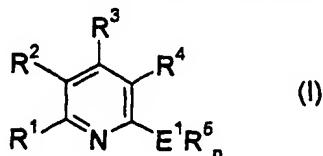


Claims

1. Process for the preparation of substituted pyridine derivatives of formula (I)



5 wherein

R^1, R^2 independently the same or different are H; C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

10

R^3 = CN, NO₂, C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

15

R^4 = $E_n R^6 m$ in which

If $n = m = 1$ than $E = S$ and R^6 = C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F, Cl, Br, I;

20 If $n = 0$ and $m = 1$ than R^6 = H, C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F, Cl, Br, I;

E^1 = O, N

25

R^5 = H

$n = 1$ for $E^1 = O$ und 2 for $E^1 = N$

30 comprising reaction of a α - β -unsaturated carbonyl compound of formula (II)

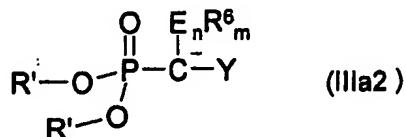
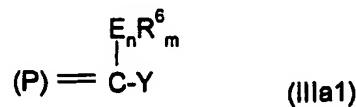


wherein

R^1 , R^2 and R^3 have the above defined meaning;

5 $G = -NH_2$ or a leaving group

with a Wittig reagent or Horner-Wadsworth-Emmons reagent of formula (III)



10

wherein

$(P) = P(Ar)_3$, with Ar = substituted or preferably unsubstituted C_{6-20} aryl, R' is equal or different independently means C_{1-20} alkyl, branched or straight or cyclic,

15 or C_{6-20} aryl;

$E_n R^6$ = in which

if $n = m = 1$ than $E = S$ and $R^6 = C_{1-20}$ -alkyl (branched or straight chain or cyclic);

20 C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I;

if $n = 0$ and $m = 1$ than $R^6 = H$, C_{1-20} -alkyl (branched or straight chain or cyclic);

C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I;

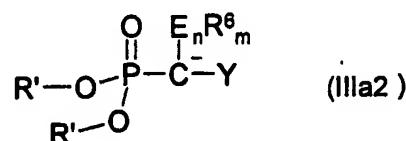
25

$Y = -CN; -C(O)NH_2; -C(O)OR^7$ with $R^7 =$ as defined for R^1 above, except H

in the presence of a base and if

- 30 i) $Y = -CN$ or $C(O)NH_2$, $G =$ a leaving group and the base is an alcoholate, subsequent acidic catalyzed, with zeolites catalyzed or basic catalyzed cyclization;
- ii) $Y = -C(O)-OR^7$, $G =$ a leaving group and the base is an alcoholate, subsequent basic cyclization in the presence of ammonia.

2. Process according to claim 1, wherein R¹ = R² = H and R³ = electron withdrawing group.
- 5 3. Process according to claims 1 to 2, wherein R¹ = R² = H and R³ is a partially or fully fluorinated C₁₋₈-alkylgroup.
4. Process according to claims 1 to 3, wherein R³ = -CF₃.
- 10 5. Phosphorus compounds of formula IIIa2



in which

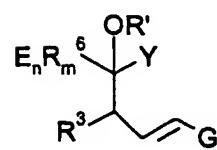
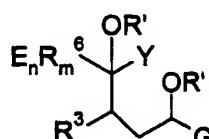
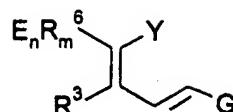
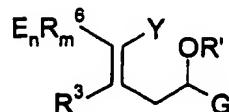
15 R' = is equal or different independently means C₁₋₂₀ alkyl, branched or straight or cyclic, or C₆₋₂₀ aryl

E_nR⁶_m = in which

20 if n = m = 1 than E = S and R⁶ = C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

25 Y = -CN; -C(O)NH₂; -C(O)OR⁷ with R⁷ = C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I.

6. Compounds of the formula IV-1 to IV-4



in which the variables have the following meanings:

5

$E_nR_m^6$ = in which

if n = m = 1 than E = S and R^6 = C₁₋₂₀-alkyl (branched or straight chain or cyclic);

10 C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

if n = 0 and m = 1 than R^6 = H, C₁₋₂₀-alkyl (branched or straight chain or cyclic);

C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

15 Y = -CN; -C(O)NH₂; -C(O)OR⁷ with R^7 = C₁₋₂₀-alkyl (branched or straight chain or cyclic);

C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F, Cl, Br, I.

20 R' is equal or different independently means C₁₋₂₀ alkyl, branched or straight or cyclic

R^3 = CN, NO₂, C₁₋₂₀-alkyl (branched or straight chain or cyclic); C₆₋₂₀-aryl - which each of those may be substituted with one or more of the following groups: F, Cl,

25 Br, I, C₁₋₂₀-alkoxy, C₆₋₂₀-aryloxy, amino; F; Cl; Br; I;

G = -NH₂ or a leaving group.

7. Compounds as claimed in claims 5 or 6 as intermediates in the synthesis of pyridine derivatives.